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Education

Doctor of Philosophy, Computer Science, 1988. Imperial College, University of London, England.
Advisor: Prof. Keith Clark.
Bachelor of Science, First class honors, Computer Science, 1979. University of Canterbury, New Zealand.

Current Positions

Arthur Holly Compton Professor (since 2003), Department of Computer Science, University of Chicago.

Senior Fellow (since 1999), Computation Institute, Argonne National Lab and the University of Chicago.

Senior Scientist (since 1998), Mathematics and Computer Science Division, Argonne National Laboratory.

Associate Director (since 1999), Mathematics and Computer Science Division, Argonne National Lab.

Head (since 1996), Distributed Systems Laboratory, Argonne National Laboratory.

Other Professional Experience

Professor (2000-03), Department of Computer Science, University of Chicago.

Scientist (1992-98), Mathematics and Computer Science Division, Argonne National Laboratory.

Associate Professor (1996-2000), Department of Computer Science, University of Chicago.

Assistant Scientist (1991-92), Mathematics and Computer Science Division, Argonne Nat. Lab.

Postdoctoral Fellow (1989-90), Mathematics and Computer Science Division, Argonne Nat. Lab.

Research Associate (1985-88), Department of Computing, Imperial College.

Technical Consultant (1983-84), BRS Europe.

Charter yacht skipper (1980-82), Pacific and Atlantic Oceans.

Honors

R&D Magazine “Innovator of the Year” Award, 2003; Fellow American Association for the Advancement of Science, 2003; Illinois Innovation Award, 2003; InfoWorld Innovator, 2003; University of Chicago Distinguished Performance Award, 2003; Silicon.com Top 50 Agenda Setter, 2003; Federal Laboratory Consortium Technology Transfer Award, 2002; Lovelace Medal, 2002; Fellow British Computer Society, 2002; R&D100 “Most Promising New Technology” Award, 2002; Gordon Bell Award, 2001; Global Information Infrastructure “Next Generation" Award, 1997; Best Paper Award, 1995 Supercomputing Conference; British Computer Society Award for Technical Innovation, 1989.

Personal Data

U.S. citizen

Languages: English (native), French

Research

Dr. Foster leads a research group at Argonne National Laboratory and the University of Chicago that investigates parallel and distributed programming systems, algorithms, and applications. He has published five books and over 200 technical papers in these areas. His research has produced innovative languages, compilers, libraries, and tools for the coordination and implementation of parallel computations (e.g., Strand, PCN, parallel I/O libraries, and task-parallel mechanisms for High Performance Fortran); parallel algorithms and codes for grand challenge computations (e.g., spectral transform algorithms, parallel geophysical models, and computational chemistry methods); performance modeling and analysis techniques; and mechanisms for dynamic, multi-threaded computations (e.g., the Nexus system).

Dr. Foster's current research focuses on the techniques required to create so-called "Grids," infrastructures and technologies for enabling resource sharing in wide-area environments. In 1995, Dr. Foster led software research and development for the I-WAY wide-area distributed computing experiment, which connected supercomputers, databases, and other high-end resources at 17 sites across North America. In 1996, he established the Distributed Systems Laboratory at Argonne and the University of Chicago, where he currently co-leads the multi-institutional Globus Alliance, which is developing core technologies for resource discovery, scheduling, configuration, security, data access, and execution in high-performance networked environments. Globus technologies are used by thousands of researchers worldwide and form the basis for several dozen national and international "Grid" projects funded by DOE, NASA, NSF, the European Union, and the UK eScience Program. This work was recognized by the 1997 Global Information Infrastructure "Next Generation" award.

Dr. Foster also serves as PI or Co-PI on projects connected to the DOE global change program, the National Computational Science Alliance, the NASA Information Power Grid project, the NSF Grid Physics Network, GRIDS Center, and International Virtual Data Grid Laboratory projects, and other DOE and NSF programs. His research is supported by DOE, NSF, NASA, Microsoft, and IBM.

Selected Professional Activities

Chair/Organizer: Information Architecture, ACM/IEEE SC Conference (2001), IEEE Intl. Symp. On High-Performance Distributed Computing (1998,2000,2001), IEEE Symp. on the Frontiers of Massively Parallel Computation (1999), DARPA/DOE/NASA/DOE Computational Grids Workshop (1997), DARPA/NSF Workshop on Performance (1996), DOE DP/ER Workshop on Public Key Infrastructure (1996), Interagency Workshop on the Peta ops Software Model (1996), Interagency Summer School on Peta ops Software (1996), DOE DP/ER Workshop on Future Security Research (1995), 4th PDEs on the Sphere Conf. (1994), Workshop on Parallel Algorithms for Semi-Lagrangian Transport (1994), NSF Workshop on High Performance Computing and Communications and Health Care (1994), Workshop on Task Parallelism in Fortran (1994).

Member: Canadian HPC Advisory Committee (since 2002), IBM Autonomic Computing Council (since 2002), Editorial Board, IEEE Internet Computing (since 2002), IIT Computer Science Advisory Board (since 2002), UK eScience Technical Advisory Group (since 2001), EU DataGrid Architecture Board (since 2001), NSF CISE Advisory Committee, Subcommittee on Middleware (2000-2001); Editorial Board, IEEE Trans. on Parallel and Distributed Systems (1997-2002); Middleware Working Group, Next Generation Internet Symp. (1997); Advisory committee, IBM Intl. Conf. On Parallel Computing; Information Architecture Committee, Supercomputing '95; Advisory Panel, Intl. Conf. on High Performance Computing (since 1995); Technical Steering Committee, NSF Center for Research on Parallel Computation (since 1992); CHAMMP Science Team (since 1992); Editorial Board, IEEE Parallel and Distributed Technology (1992-2001).

Special Issues: Multimedia and High-Performance Computing, *IEEE Parallel and Distributed Technology*, May 1995; Parallel Computing and Climate Modeling, *Parallel Computing*, Nov. 1995.

Program Committees: Principles of Distributed Computing (2002), Workshop on High-Performance Java (1997, 1998), Intl. Conf. on Supercomputing (1997), Workshop on High-Level Parallel Programming Models and Supportive Environments (1997), Massively Parallel Programming Models Conf. (1997), Runtime Systems for Parallel Programming Workshop (1997, 1998), High Performance Distributed

Computing Conf. (1997-99), Supercomputing Conf. (1995-97, 1999), Intl. Parallel Processing Symp. (1996-97), CANPC Workshop (1997), PDEs on the Sphere Conf. (1993-96), PAWS'96 Peta ops Architecture Workshop, 1st Intl. Workshop on Software Engineering for Parallel and Distributed Systems (1996), EUROPAR (1996, 1999), Parallel Computational Fluid Dynamics (1995-96), Mardi Gras Conf. on High Performance Applications and Technologies (1995), PARCO '95, High Performance Fortran Conf. (1995), ACM Principles and Practice of Parallel Programming (1995, 1999), Frontiers '95 Conf.

Reviewer: NSF, DOE, NASA, U.K., Austrian Science Foundation, and various journals and conferences.

Books

1. The Grid: Blueprint for a New Computing Infrastructure (2nd Edition), I. Foster and C. Kesselman (Eds), Morgan-Kaufmann, 2003.
2. A Parallel Computing Handbook, J. Dongarra, I. Foster, W. Gropp, K. Kennedy, L. Torczon, A. White (Eds), Morgan-Kaufman, 2002.
3. The Grid: Blueprint for a New Computing Infrastructure, I. Foster and C. Kesselman (Eds), Morgan-Kaufmann, 1999.
4. Designing and Building Parallel Programs: Concepts and Tools for Parallel Software Engineering, I. Foster, Addison-Wesley and at http://www.mcs.anl.gov/dbpp/, 1995.
5. Strand: New Concepts in Parallel Programming, I. Foster, S. Taylor, Prentice-Hall, 1990.
6. Systems Programming in Parallel Logic Languages, I. Foster, Prentice-Hall, 1989.

Journal Articles and Book Chapters

1. "MPICH-G2: A Grid-Enabled Implementation of the Message Passing Interface," N. Karonis, B. Toonen, I. Foster, **Journal of Parallel and Distributed Computing**, 2003.
2. "Computational Grids in Action: The National Fusion Collaboratory," K. Keahey, T. Fredian, Q. Peng, D.P. Schissel, M. Thompson, I. Foster, M. Greenwald, D. McCune, **Future Generation Computer Systems**, 2002.
3. "End-to-End Quality of Service for High-end Applications," I. Foster, M. Fidler, A. Roy, V, Sander, L. Winkler, **Computer Communications**, 2002.
4. "Grid Services for Distributed System Integration," I. Foster, C. Kesselman, J. Nick, S. Tuecke. **IEEE Computer**, 35(6), 2002.
5. "Grid Technologies Empowering Drug Discovery," A. Chien, I. Foster, D. Goddette, **Drug Discovery Today**, 7(20 Suppl):S176-180, 2002.
6. "Condor-G: A Computation Management Agent for Multi-Institutional Grids," J. Frey, T. Tannenbaum, I. Foster, M. Livny, S. Tuecke, **Cluster Computing**, 5(3):237-246, 2002.
7. "File and Object Replication in Data Grids," H. Stockinger, A. Samar, W. Allcock, I. Foster, K. Holtman, B. Tierney, **Cluster Computing**, 5(3):305-314, 2002.
8. "The Astrophysics Simulation Collaboratory: A Science Portal Enabling Community Software Development," M. Russell, G. Allen, G. Daues, I. Foster, E. Seidel, J. Novotny, J. Shalf, G. von Laszewski, **Cluster Computing**, 5(3):297-304, 2002.
9. "Grids and Research Networks as Drivers and Enablers of Future Internet Architectures," K. Baxevanidis, H. Davies, I. Foster, F. Gagliardi, **Computer Networks**, 40(1), 2002.
10. "The Grid: A New Infrastructure for 21st Century Science," I. Foster, **Physics Today**, 55(2):42-47, 2002.
11. "Disk Resident Arrays: An Array-Oriented I/O Library for Out-of-Core Computations," I. Foster, J. Nieplocha, **High-Performance Mass Storage and Parallel I/O**, 488-498, IEEE and Wiley Press, 2002.

12. “Data Management and Transfer in High-Performance Computational Grid Environments," W. Allcock, J. Bester, J. Bresnahan, A. Chervenak, I. Foster, C. Kesselman, S. Meder, V. Nefedova, D. Quesnel, S. Tuecke, **Parallel Computing**, 28(5):749-771, 2002.
13. “A High-Throughput X-ray Microtomography System at the Advanced Photon Source,” Y. Wang, F. De Carlo, D. Mancini, I. McNulty, B. Tieman, J. Bresnahan, I. Foster, J. Insley, P. Lane, G. von Laszewski, C. Kesselman, M.-H. Su, M. Thiebaux. **Review of Scientific Instruments**, 72(4):2062–2068, 2001.
14. “The Cactus Worm: Experiments with Dynamic Resource Selection and Allocation in a Grid Environment,” G. Allen, D. Angulo, I. Foster, G. Lanfermann, C. Liu, T. Radke, E. Seidel, J. Shalf, **Intl. J. High Performance Computing Applications**, 15(4), 2001.
15. “Performance Predictions for a Numerical Relativity Package in Grid Environments,” M. Ripeanu, A. Iamnitchi, I. Foster, **Intl. J. High Performance Computing Applications**, 15(4), 2001.
16. “The GrADS Project: Software Support for High-Level Grid Application Development,” F. Berman, A. Chien, K. Cooper, J. Dongarra, I. Foster, D. Gannon, L. Johnsson, K. Kennedy, C. Kesselman, J. Mellor-Crummey, D. Reed, L. Torczon, R. Wolski, **Intl. J. High Performance Computing Applications**, 15(4), 2001.
17. “The Emergence of the Grid,” I. Foster, **Nature Yearbook of Science and Technology**, Nature Publishing Group, 2001.
18. “The Anatomy of the Grid: Enabling Scalable Virtual Organizations,” I. Foster, C. Kesselman, S. Tuecke, **Intl. Intl. J. High Performance Computing Applications**, 15(3):200-222, 2001.
19. “Multiparadigm Communications in Java for Grid Computing,” V. Getov, G. von Laszewski, M. Philippsen, I. Foster, **Commun. ACM**, 44(10):118-125, 2001.
20. “The Data Grid: Towards an Architecture for the Distributed Management and Analysis of Large Scientific Datasets,” A. Chervenak, I. Foster, C. Kesselman, C. Salisbury, S. Tuecke, **J. of Network and Computer Applications**, 23:187-200, 2001.
21. “Generalized Communicators in the Message Passing Interface.” E. Demaine, I. Foster, C. Kesselman, M. Snir, **IEEE Trans. Parallel and Distributed Systems**, 12(6):610-616, 2001.
22. “The Emerging Grid,” I. Foster, C. Kesselman, **Computational Aerosciences in the 21st Century**, 29-46, Kluwer Academic, 2000.
23. “A National-Scale Authentication Infrastructure.” R. Butler, D. Engert, I. Foster, C. Kesselman, S. Tuecke, J. Volmer, V. Welch, **IEEE Computer**, 33(12):60-66, 2000.
24. “Distance Visualization: Data Exploration on the Grid.” I. Foster, J. Insley, G. von Laszewski, C. Kesselman, M. Thiebaux, **IEEE Computer**, 32(12):36-43, 1999.
25. “A Fault Detection Service for Wide Area Distributed Computations,” P. Stelling, C. DeMatteis, I. Foster, C. Kesselman, C. Lee, G. von Laszewski, **Cluster Computing**, 2:117-128, 1999.
26. “The Data Grid: Towards an Architecture for the Distributed Management and Analysis of Large Scientific Data Sets,” A. Chervenak, I. Foster, C. Kesselman, C. Salisbury, S. Tuecke, **J. Network and Computer Applications**, 23:187-200, 2001.
27. “A Java Commodity Grid Toolkit.” G. von Laszewski, I. Foster, J. Gawor, P. Lane. **Concurrency: Practice and Experience**, 13, 2001 (to appear).
28. “Using Computational Grid Capabilities to Enhance the Ability of an X-ray Source for Structural Biology.” G. von Laszewski, M. Westbrook, I. Foster, E. Westbrook, C. Barnes. Cluster **Computing**, 3(3):187–199, 2000.
29. “Parallel Programming Languages,” in **Handbook on Parallel and Distributed Processing**, Springer-Verlag, 1999 (to appear).
30. “Implementing Noncollective Parallel I/O In Cluster Environments Using Active Message Communication,” J. Nieplocha, H. Dachsel, I. Foster, **Cluster Computing**, 2(4):271-280, 2000.

31. "Computational Grids," I. Foster, C. Kesselman, **The Grid: Blueprint for a New Computing Infrastructure**, Morgan-Kaufmann, 15-52, 1999.
32. "The Globus Toolkit," I. Foster, C. Kesselman, **The Grid: Blueprint for a New Computing Infrastructure**, Morgan-Kaufmann, 259-278, 1999.
33. "A Computational Framework for Telemedicine," I. Foster, G. von Laszewski, B. Toonen, G. Thiruvathukal, **Future Generation Computer Systems**, 14:109-123, 1998.
34. "Wide-Area Implementation of the Message Passing Interface," I. Foster, J. Geisler, W. Gropp, N. Karonis, E. Lusk, G. Thiruvathukal, S. Tuecke, **Parallel Computing**, 24(12):1735-1749, 1998.
35. "Managing Security in High-Performance Distributed Computations," I. Foster, N. Karonis, C. Kesselman, S. Tuecke, **Cluster Computing**, 1(1):95-107, 1998.
36. "Software Infrastructure for the I-WAY Metacomputing Experiment," I. Foster, J. Geisler, W. Nickless, W. Smith, S. Tuecke, **Concurrency: Practice and Experience**, 10(7):567-581, 1998.
37. "ChemIO: High-Performance Parallel I/O for Computational Chemistry Applications," J. Nieplocha, I. Foster, R. Kendall, **Intl. J. Supercomputer Applications**, 12(3):260-266, 1998.
38. "A Library-Based Approach to Task Parallelism in a Data-Parallel Language," I. Foster, D. Kohr, R. Krishnaiyer, A. Choudhary, **J. Parallel and Distributed Computing**, 1997 (to appear).
39. "Technologies for Ubiquitous Supercomputing: A Java Interface to the Nexus Communication System," I. Foster, G. Thiruvathukal, S. Tuecke, **Concurrency: Practice and Experience**, 9(6):465-475, 1197.
40. "Globus: A Metacomputing Infrastructure Toolkit," I. Foster, C. Kesselman, **Intl. J. Supercomputer Applications**, 11(2):115-128, 1997.
41. "Explicit Management of Memory Hierarchy," J. Nieplocha, R. Harrison, I. Foster, **High Performance Computing: Technology and Applications**, Kluwer Academic, 1996.
42. "Managing Multiple Communication Methods in High-Performance Networked Computing Systems," I. Foster, J. Geisler, C. Kesselman, S. Tuecke, **J. Parallel and Distributed Computing**, 40:35-48, 1997.
43. "Relative Debugging: A New Methodology for Debugging Scientific Applications," D. Abramson, I. Foster, J. Michalakes, R. Sosic, **Commun. ACM**, 39(11):69-77, 1996.
44. "The Nexus Approach to Integrating Multithreading and Communication," I. Foster, C. Kesselman, S. Tuecke, **J. Parallel and Distributed Computing**, 37:70-82, 1996.
45. "Exploring Coupled Atmosphere-Ocean Models Using Vis5D," W. Hibbard, J. Anderson, I. Foster, B. Paul, R. Jacob, C. Schafer, M. Tyree, **Intl. J. Supercomputer Applications**, 10(2):199-207, 1996.
46. "Overview of the I-WAY: Wide Area Visual Supercomputing," T. DeFanti, I. Foster, M. Papka, R. Stevens, T. Kuhfuss, **Intl. J. Supercomputer Applications**, 10(2):123-130, 1996.
47. "Performance of Massively Parallel Computers for Spectral Atmospheric Models," I. Foster, B. Toonen, P. Worley, **J. Atmospheric and Oceanic Technology**, 13(5):1031-45, 1996.
48. "Parallel Algorithms for the Spectral Transform Method," I. Foster, P. Worley, **SIAM J. Scientific Computing**, 18(3), 1997.
49. "Towards High Performance Computational Chemistry: (I) Scalable Fock Matrix Construction Algorithms," I. Foster, J. Tilson, A. Wagner, R. Shepard, R. Harrison, R. Kendall, R. Littlefield, **J. Comp. Chem.**, 17(1):109-123, 1996.
50. "Towards High Performance Computational Chemistry: (II) A Scalable SCF Program," R. Harrison, I. Foster, et al., **J. Comp. Chem.**, 17(1):124-132, 1996.
51. "Compositional Parallel Programming Languages," I. Foster, **ACM Trans. Prog. Lang. Syst**., 18(4):454-476, 1996.

52. "Design and Performance of a Scalable Parallel Community Climate Model," J. Drake, I. Foster, J. Michalakes, B. Toonen, P. Worley, **Parallel Computing**, 21(10):1571-1591, 1995.

53. "Point-to-Point Communications Using Migrating Ports," I. Foster, D. Kohr, R. Olson, S. Tuecke, M. Xu, **Languages, Compilers, and Run-time Systems for Scalable Computers**, Kluwer Academic Publishers, 199-212, 1995.

54. "A Deterministic Notation for Cooperating Processes," K. M. Chandy, I. Foster, **IEEE Trans. Parallel and Distributed Systems**, 6(8):863-871, 1995.

55. "Fortran M: A Language for Modular Parallel Programming," I. Foster, K. M. Chandy, **J. Parallel and Distributed Computing**, 26(1):24-35, 1995.

56. "Task Parallelism and High-Performance Languages," I. Foster, **IEEE Parallel and Distributed Technology**, 2(3):27-36, 1994. Extended version reprinted in **Readings in Data Parallelism**, Springer-Verlag LNCS, 1996.

57. "Integrated Support for Task and Data Parallelism," K. M. Chandy, I. Foster, K. Kennedy, C. Koelbel, C.-W. Tseng, **Intl. J. Supercomputer Applications**, 8(2):80-98, 1994.

58. "A Compiler Approach to Scalable Concurrent Program Design," I. Foster, S. Taylor, **ACM Trans. Prog. Lang. Syst.**, 16(3):577-604, 1994.

59. "Productive Parallel Programming: The PCN Approach," I. Foster, R. Olson, S. Tuecke, **Scientific Programming**, 1(1):51-66, 1992. Reprinted in **Programming Languages for Parallel Processing**, D. Skillicorn, D. Talia (eds.), IEEE, 358-373, 1995.

60. "The Parallel Scalability of the Spectral Transform Method," I. Foster, W. Gropp, R. Stevens, **Monthly Weather Review**, 120(5):835-850, 1992.

61. "Efficient Computation Control in Concurrent Logic Languages," I. Foster, **New Generation Computing**, 10(1):1-22, 1991.

62. "Automatic Generation of Self-Scheduling Programs," I. Foster, **IEEE Trans. Parallel and Distributed Systems**, 2(1):68-78, 1991.

63. "Aligning Multiple RNA Sequences," R. Overbeek, I. Foster, **Festschrift for W. Bledsoe**, R.Boyer (ed.), Kluwer Academic Publishers, 1991.

64. "A Declarative State Transition System," I. Foster, **J. Logic Programming**, 10:45-67, 1991.

65. "Concurrency: Simple Concepts and Powerful Tools," I. Foster, C. Kesselman, S. Taylor, **Computer J.**, 33(6):501-507, 1990.

66. "A Multicomputer Garbage Collector for a Single-Assignment Language," I. Foster, **Intl. J. of Parallel Programming**, 18(3):181-203, 1989.

67. "Aligning Genetic Sequences," R. Butler, T. Butler, I. Foster, N. Karonis, R. Olson, R. Overbeek, N. Pluger, M. Price, S. Tuecke, in **Strand: New Concepts in Parallel Programming**, 253-271,1989.

68. "Implementation of a Declarative State Transition System," I. Foster, **Software - Practice and Experience**, 19(4):351-370, 1989.

69. "An Abstract Machine for the Implementation of Parlog on Uniprocessors," S. Gregory, I. Foster, A. Burt, G. Ringwood, **New Generation Computing**, 6:389-420, 1989.

70. "Flat Parlog: A Basis for Comparison," I. Foster, S. Taylor, **Intl. J. Parallel Programming**, 16(2):87-125, 1988.

Conference Proceedings

71. "NEESgrid: A Distributed Collaboratory for Advanced Earthquake Engineering Experiment and Simulation," B. Spencer Jr., T.A. Finholt, I. Foster, C. Kesselman, C. Beldica, J. Futrelle, S. Gullapalli, P. Hubbard, L. Liming, D. Marcusiu, L. Pearlman, C. Severance, G. Yang. **13th World Conference on Earthquake Engineering**, 2004.

72. "Distributed Hybrid Earthquake Engineering Experiments: Experiences with a Ground-Shaking Grid Application," L. Pearlman, C. Kesselman, S. Gullapalli, B.F. Spencer, Jr., J. Futrelle, K. Ricker, I. Foster, P. Hubbard and C. Severance. **13th IEEE International Symposium on High Performance Distributed Computing**, 2004.

73. "The Grid2003 Production Grid: Principles and Practice," I. Foster, J. Gieraltowski, S. Gose, N. Maltsev, E. May, A. Rodriguez, D. Sulakhe, A. Vaniachine, J. Shank, S. Youssef, D. Adams, R. Baker, W. Deng, J. Smith, D. Yu, I. Legrand, S. Singh, C. Steenberg, Y. Xia, A. Afaq, E. Berman, J. Annis, L.A.T. Bauerdick, M. Ernst, I. Fisk, L. Giacchetti, G. Graham, A. Heavey, J. Kaiser, N. Kuropatkin, R. Pordes, V. Sekhri, J. Weigand, Y. Wu, K. Baker, L. Sorrillo, J. Huth, M. Allen, L. Grundhoefer, J. Hicks, F. Luehring, S. Peck, R. Quick, S. Simms, G. Fekete, J. vandenBerg, K. Cho, K. Kwon, D. Son, H. Park, S. Canon, K. Jackson, D.E. Konerding, J. Lee, D. Olson, I. Sakrejda, B. Tierney, M. Green, R. Miller, J. Letts, T. Martin, D. Bury, C. Dumitrescu, D. Engh, R. Gardner, M. Mambelli, Y. Smirnov, J. Voeckler, M. Wilde, Y. Zhao, X. Zhao, P. Avery, R. Cavanaugh, B. Kim, C. Prescott, J. Rodriguez, A. Zahn, S. McKee, C. Jordan, J. Prewett, T. Thomas, H. Severini, B. Clifford, E. Deelman, L. Flon, C. Kesselman, G. Mehta, N. Olomu, K. Vahi, K. De, P. McGuigan, M. Sosebee, D. Bradley, P. Couvares, A. De Smet, C. Kireyev, E. Paulson, A. Roy, S. Koranda, B. Moe. **13th International IEEE Symposium on High Performance Distributed Computing**, 2004.

74. "Globus and PlanetLab Resource Management Solutions Compared**,"** M. Ripeanu, M. Bowman, J. Chase, I. Foster, and M. Milenkovic. ***13th*** **IEEE Symposium on High Performance Distributed Computing**, 2004.

75. **"**Homeostatic and Tendency-based CPU Load Predictions," L. Yang, I. Foster, J. Schopf. **IPDPS 2003**. April 2003.

76. "Small-World File-Sharing Communities," A. Iamnitchi, M. Ripeanu, and I. Foster**. INFOCOM 2004**, 2004.

77. **"**X.509 Proxy Certificates for Dynamic Delegation," V. Welch, I. Foster, C. Kesselman, O. Mulmo, L. Pearlman, S. Tuecke, J. Gawor, S. Meder, F. Siebenlist. **PKI R&D Workshop***,* 2004.

78. "Reliable Data Transport: A Critical Service for the Grid," W.E. Allcock, I. Foster, R. Madduri. **Building Service Based Grids Workshop, Global Grid Forum 11**, 2004.

79. "Conservative Scheduling: Using Predicted Variance to Improve Scheduling Decisions in Dynamic Environments," L. Yang, J.M. Schopf, I. Foster. **SC' 2003**, 2003.

80. **"**Security for Grid Services," V. Welch, F. Siebenlist, I. Foster, J. Bresnahan, K. Czajkowski, J. Gawor, C. Kesselman, S. Meder, L. Pearlman, S. Tuecke **12th IEEE International Symposium on High Performance Distributed Computing**, 2003.

81. "Giggle: A Framework for Constructing Scalable Replica Location Services," A. Chervenak, E. Deelman, I. Foster, L. Guy, W. Hoschek, A. Iamnitchi, C. Kesselman, P. Kunst, M. Ripeanu, B, Schwartzkopf, H, Stockinger, K. Stockinger, B. Tierney, **SC'2002**, 2002.

82. "Applying Chimera Virtual Data Concepts to Cluster Finding in the Sloan Sky Survey," J. Annis, Y, Zhao, J. Voeckler, M. Wilde, S. Kent, I. Foster. **SC'2002**, 2002.

83. "SNAP: A Protocol for Negotiating Service Level Agreements and Coordinating Resource Management in Distributed Systems," K. Czajkowski, I. Foster, C. Kesselman, V. Sander, S. Tuecke, **8th Workshop on Job Scheduling Strategies for Parallel Processing**, 2002.

84. "Predicting the Performance of Wide Area Data Transfers," S. Vazhkudai, J. M. Schopf, I. Foster. **Proceedings of the 16th International Parallel and Distributed Processing Symposium**, 2002.

85. "Decoupling Computation and Data Scheduling in Distributed Data-Intensive Applications," K. Ranganathan, I. Foster, **11th IEEE Intl. Symposium on High Performance Distributed Computing**, 2002.

86. "GridMapper: A Tool for Visualizing the Behavior of Large-Scale Distributed Systems," W. Allcock, J. Bester, J. Bresnahan, I. Foster, J. Gawor, J. A. Insley, J. M. Link, M. E. Papka. **11th IEEE Intl. Symposium on High Performance Distributed Computing**, 179-187, 2002.

87. "A Decentralized, Adaptive, Replica Location Service," M. Ripeanu, I. Foster; **11th IEEE Intl. Symposium on High Performance Distributed Computing**, 2002.

88. "Design and Evaluation of a Resource Selection Framework for Grid Applications," C. Liu, L. Yang, D. Angulo, I. Foster, **11th IEEE Intl. Symposium on High Performance Distributed Computing**, 2002.

89. "InfoGram: A Grid Service that Supports Both Information Queries and Job Execution," G. von Laszewski, I. Foster, J. Gawor, A. Schreiber, C. Pena. **11th IEEE Intl. Symposium on High-Performance Distributed Computing**, 2002.

90. "Chimera: A Virtual Data System for Representing, Querying, and Automating Data Derivation," I. Foster, J. Voeckler, M. Wilde, Y. Zhao, **14th Conference on Scientific and Statistical Database Management**, 2002.

91. "Improving Data Availability through Dynamic Model-Driven Replication in Large Peer-to-Peer Communities," K. Ranganathan, A. Iamnitchi, I. Foster, **Global and Peer-to-Peer Computing on Large Scale Distributed Systems Workshop**, 2002.

92. "Locating Data in (Small-World?) Peer-to-Peer Scientific Collaborations," A. Iamnitchi, M. Ripeanu, I. Foster, **1st International Workshop on Peer-to-Peer Systems**, 2002.

93. "Mapping the Gnutella Network: Macroscopic Properties of Large-Scale Peer-to-Peer Systems," M. Ripeanu, I. Foster, **1st International Workshop on Peer-to-Peer Systems**, 2002.

94. "A Community Authorization Service for Group Collaboration," L. Pearlman, V. Welch, I. Foster, C. Kesselman, S. Tuecke, **IEEE 3rd International Workshop on Policies for Distributed Systems and Networks**, 2002.

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245. "The Program Composition Project," K.M. Chandy, I. Foster, C. Kesselman, S. Taylor, Caltech-CS-TR-90-03, California Institute of Technology, 1990.

246. "Generating Alignments of Genetic Sequences," R. Butler et al., ANL/MCS-TM-132, 1989.

247. "Strand: The Language and its Implementation," I. Foster, S. Taylor, PAR 88/11, Dept of Computing, Imperial College, 1988.

248. "Strand Language Reference Manual," I. Foster, S. Taylor, PAR 88/10, Dept of Computing, Imperial College, 1988.

249. "The X Machine: A Proposal for Construction," F. McCabe, I. Foster, Dept of Computing, Imperial College, 1988.

250. "Compiling Parlog for the Sequential Parlog Machine," I. Foster, PAR 86/3, Dept of Computing, Imperial College, 1986.

251. "Parlog Programming System: User Guide and Reference Manual," I. Foster, PAR 86/6, Dept of Computing, Imperial College, 1986.

Selected Invited Talks

"Brain Meets Brawn: Why Grid and Agents Need Each Other," 3rd International Conference on Autonomous Agents and Multi Agent Systems, New York, July 2004. (Kenote.)

"The Grid: Essential Infrastructure for DOE Science," Presentation at the SciDAC PI Meeting, Charleston, North Carolina, March 2004.

"The Grid and its Implications for Science (and Industry)," Royal Society of New Zealand, Wellington, New Zealand, March 2004.

"Grid Physics Network & International Virtual Data Grid Lab," Presentation at the NSF Scalable Cyberinfrastructure Division PI Meeting, February 2004.

"Introduction to the Grid," COMDEX 2003, Las Vegas, Nevada, November 2003. (Tutorial.)

"OGSA," APAC'03, Queensland, Australia, September 2003. (Tutorial.)

"How the Linux and Grid Communities can Build the Next Generation Internet Platform," Ottawa Linux Symposium, Ottawa, Canada, July 2003.

"Data and the Grid: From Databases to Global Knowledge Communities," 15th International Conference on Scientific and Statistical Database Management (SSDBM 2003), Cambridge, MA, July 2003. (Keynote.)

"The Grid: The First 50 years," British Computer Society, Lovelace Medal Award Presentation, May 2003.

"Security and Certification Issues in Grid Computing," International Workshop on Certification and Security in E-Services (CSES 2002), Montreal, Canada, August 2002. (Keynote.)

"Future Scientific Infrastructure," DAS-2 Conference, Amsterdam, June 2002; and QUESTnet, Gold Coast, Australia, July 2002. (Keynote.)

"Virtual Data and the Chimera System," HPC 2002 Conference, Cetraro, Italy, June 2002.

"The Grid and the Future of Business," Delphi Web Services Conference, San Jose, May 2002. (Keynote.)

"The Grid: Enabling Resource Sharing within Virtual Organizations," World Wide Web Conference 2002, Honolulu, Hawaii, May 2002. (Keynote.)

"Grid Computing: Concepts, Applications, and Technologies," Grid Computing in Canada Workshop, Edmonton, 2002. (Tutorial.)

"Data Grids and Data Intensive Science,"Research Library Group Annual Conference, Amsterdam, April 2002. (Keynote.)

"Grid Computing and Web Services: A Natural Partnership," Euromicro Workshop on Parallel, Distributed, and Network Computing, Gran Canaria, January 2002. (Keynote.)

"The Anatomy of the Grid: Enabling Scalable Virtual Organizations," AURORA International Workshop on Grid Computing, Vienna, Austria, December 2001. (Keynote.)

"Securing the Grid and other Middleware Challenges," NSF Workshop on Grand Challenges in eScience, Chicago, Ill., December 2001.

"Realizing the Promise of Grid Computing," NSF Advisory Committee on Cyberinfrastructure, Washington, DC (via Access Grid), November 2001.

"SC Global: Celebrating Global Science," SC'2001 Masterworks Presentation, Denver, Colorado, November 2001.

"Grid Computing," Sun HPC Consortium Conference, Denver, Col., November 2001. (Keynote.)

"Grid Computing," IBM Advanced eBusiness Conference, Austin, TX, October 2001.

"Keeping Grid Projects Coherent," EU DataGrid Industry Forum, Frascati, Italy, October 2001.

"Grid Computing: Architecture and Achievements," CHEP'2001, Beijing, China, September 2001. (Plenary.)

"The Anatomy of the Grid: Enabling Scalable Virtual Organizations," Euro-Par 2001, Brisbane, Australia, August 2001. (Keynote.)

"Globus Project Current Status," Globus Retreat, San Francisco, August 2001

"Grids and Grid Technologies," OMG Workshop on the Grid, Boston, July 2001.

"The Earth System Grid Project," Global Grid Forum 2, Washington, DC, July 2001.

"U.S. Grid Projects," Upperside Conference on Industrial Grids, Paris, June 2001. (Keynote.)

"Parallel Computing in 2001," PPoPP 2001, Snowbird, June 2001. (Keynote.)

"The Anatomy of the Grid: Enabling Scalable Virtual Organizations," IEEE Conf. On Cluster Computing and the Grid (CCGrid), Brisbane, Australia, May 2001. (Keynote.)

"The GriPhyN Project," Alliance All-Hands Meeting, Urbana, May 2001.

"Grids: Past, Current, Future Activities," European Union Grid Summit, Brussels, March 2001.

"Middleware," Access Grid Retreat, Argonne, January 2001.

"Middleware and Grids," NSF Middleware Panel, December 2000.

"The Grid Forum," Intel Peer-to-Peer Conference, San Jose, October 2000.

"Grid Computing," ACAT Conference, FermiLab, October 2000. (Plenary.)

"Grid Architecture," Grid Forum 5, Boston, October 2000. (Keynote.)

"MPICH-G2: A Grid-Enabled MPI," NASA Information Power Grid Workshop, San Jose, September 2000.

"Designing and Building Parallel Climate Models," Computational Science and Engineering Symp., Urbana, April 1997. (Keynote.)

"Autoconfiguration in Heterogeneous Clusters," Cluster Computing Conf., Altanta, February 1997. (Keynote.)

"High-Performance Distributed Computing: The I-WAY Experiment and Beyond," PART '96, Brisbane, Australia, August 1996. (Keynote.)

"High-Performance Distributed Computing: The I-WAY Experiment and Beyond," EUROPAR '96, Lyon, France, August 1996. (Keynote.)

"Ubiquitous Supercomputing," ASCI '96, Holland, June 1996. (Keynote.)

"The I-WAY and Globus Projects," Intl. Conf. on Supercomputing, Philadelphia, May 1996.

"Multithreading and High-Performance Computing," European School on High Performance Computing, Alpes d'Huez, France, April 1996.

"Parallel Algorithms for Climate Models," Annual Meeting of the French SIAM, Grenoble, France, March 1996.

"Task and Data Parallelism," Spring School on Data Parallelism, Les Menuires, France, March 1996.

"Runtime Support for Parallel Object-Oriented Languages," Workshop on Parallel Object-Oriented Programming, Southampton, England, March 1996.

Selected Seminars

"The Grid: Opportunities, Achievements, and Challenges for (Computer) Science," University of Canterbury, Christchurch, New Zealand, March 2004.

"An Open Grid Services Architecture," Indiana University, January 2002.

"The Anatomy of the Grid: Enabling Scalable Virtual Organizations," University of Edinburgh, December 2001.

"The Anatomy of the Grid: Enabling Scalable Virtual Organizations," U. Florida, Gainesville, FL, November 2001. (Distinguished HPC Seminar.)

"Grid Computing and Applications," FermiLab, Batavia, IL, October 2001.

"Grid Technologies and Applications: Architecture and Achievements," CERN, Geneva, August 2001.

"Grid Computing," CERN, Geneva, January 2001.

"The Globus Toolkit," IBM Yorktown, December 2000.

"The GARA Quality of Service Architecture," Cisco, San Jose, April 2000.

"High-Performance Computational Grids," University of Tennessee, October, 1997; University of California at Berkeley, October 1997.

"Network-Based Approaches to Supercomputing," Lawrence Berkeley National Laboratory, July 1996; University of California at San Diego, December 1996; California Institute of Technology, April 1997.

"High-Performance Distributed Computing: The I-WAY Experiment and Beyond," University of Nebraska, March 1996.

"Ubiquitous Supercomputing," University of Chicago, April 1996.

"High-Performance Distributed Computing: The I-WAY Experiment and Beyond," Politechnico di Milano, January 1996.

"Software Infrastructure for High-Performance Distributed Computing," University of Illinois, November 1994.

"A Massively Parallel Atmospheric Model Testbed," Microelectronics Center of North Carolina, April 1994.

"Modular Parallel Programming," University of California at Los Angeles; NASA Langeley Research Center; UT Austin; 1993.

"Fortran M: A Language for Modular Parallel Programming," Intel Corporation, Portland, Ore., July 1993.

"Deterministic Parallel Programming Languages," Harvard University; Thinking Machines Corporation; Jan. 1993.

“Information Hiding in Parallel Programs,” California Institute of Technology; UC Santa Barbara; U. Illinois at Urbana-Champaign; Imperial College; 1992.

“Software Engineering Issues in Parallel Climate Models,” ICIAM '91, Washington, D.C., 1991.

“Parallel Algorithms for Computing the Spectral Transform,” California Institute of Technology, 1991.